Research Methods

Survey design

• A cross-sectional, population-based household survey was conducted using a multi-stage stratified cluster random sampling approach.

• The study design was based on the methods used and validated in the four previous surveys carried out by HSRC in 2002, 2005, 2008 and 2012 including linked anonymous testing with informed consent.

Survey population

• This survey included persons of all ages living in South Africa.
• All members of the selected households were invited to participate, including those living in hostels.
Survey data collection tools

Questionnaires

Four questionnaires were used in this survey:

- Household Questionnaire
- Questionnaire for parent/guardian of children aged 0 to 11 years
- Questionnaire for children aged 12 to 14 years
- Questionnaire for persons aged 15 years and older

The main focus of the study was on knowledge, attitudes and behaviour. New modules were added: tuberculosis (TB), Inter-partner violence and exposure to various HIV communication campaigns.
## Response Rates, South Africa 2017

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid households</td>
<td>11,743</td>
</tr>
<tr>
<td>Eligible individuals</td>
<td>39,132</td>
</tr>
<tr>
<td>Blood samples</td>
<td>23,923</td>
</tr>
<tr>
<td>Household level response (%)</td>
<td>82.2</td>
</tr>
<tr>
<td>Individual level response (%)</td>
<td>93.6</td>
</tr>
<tr>
<td>HIV testing response (%)</td>
<td>61.1</td>
</tr>
</tbody>
</table>
HIV testing procedure

- All DBS samples were tested for HIV in the laboratory using approved methods.
- Those found to be positive were confirmed by doing two additional tests.
- One tenth of all specimens that were found to be negative were also tested once more using another test for quality assurance purposes.
Laboratory Testing: National HIV Household Survey South Africa 2017

Dried Blood Spot

HIV Ab screening
Nucleic Acid Amplification Test

HIV Pos

HIV Incidence (> 2 years)
ARVs
Viral Load
HIV Drug Resistance *
Recent Infection Detection Algorithm

HIV + (≥ 2 yrs) → LAg-Avidity EIA → LT-Long-term

- Chronically infected subjects

Recent → ARV Testing

- ARV Positive
  - Chronically infected subjects receiving HAART *
- Negative
  - <1000 copies/mL → Chronically infected elite suppressor or subjects with low VL
  - >1000 copies/mL → Recently infected individuals
Understanding the HIV epidemic

New infections

Prevalence

Deaths

On ART

Not on ART
HIV Incidence
• The overall incidence rate was 0.48 % which translates to 231 000 new infections

• Incidence was higher among females (0.51% => 122 000 new infections) as compared to males (0.46% => 109 000 new infections)
HIV Incidence among youth aged 15 to 24 years by Sex, South Africa, 2017

- Overall incidence was 1.0% which translated to 88,000 new infections

- The incidence was three times higher among females (1.51% translating to 66,000 new infections) compared to males (0.49% translating to 22,000)

- Over a third (38.0%) of all new infections come from this age group
Overall incidence in the reproductive age group was 0.79% which translates to 200,000 new infections.

The incidence was higher among females (0.93% translating to 107,000 new infections) compared to males (0.69% translating to 92,000 new infections).
• NB. The 2012 results were re-calculated using the 2017 test parameters
• The overall HIV incidence has significantly dropped by 44%.
• The largest decline (56%) in incidence was among females.
• Among males the incidence declined by 18%
The overall HIV incidence among youth declined by 17%.
The decline in incidence was only among females (26%).
Whilst among males incidence increased by 11%.
The overall HIV incidence in the reproductive age group has dropped significantly by 42%.

The biggest decline (49%) in incidence was among females.

Among males the incidence declined by 28%.
ARV treatment & exposure
<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated number of people on ART (n)</th>
<th>Proportion of people living with HIV on ART (%) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>4,401,872</td>
<td>62.3 (59.2-65.2)</td>
</tr>
<tr>
<td>Female</td>
<td>2,998,170</td>
<td>65.5 (62.4-68.4)</td>
</tr>
<tr>
<td>Male</td>
<td>1,403,702</td>
<td>56.3 (51.0-61.5)</td>
</tr>
</tbody>
</table>
## ART exposure by age group, South Africa, 2017

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Estimated number of people on ART (n)</th>
<th>Proportion of people living with HIV on ART (%) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>4,401,872</td>
<td>62.3 (59.2-65.2)</td>
</tr>
<tr>
<td>0-14</td>
<td>131,052</td>
<td>50.0 (36.6-63.3)</td>
</tr>
<tr>
<td>15-24</td>
<td>273,981</td>
<td>39.9 (32.1-48.3)</td>
</tr>
<tr>
<td>25-49</td>
<td>3,243,819</td>
<td>63.1 (59.2-66.8)</td>
</tr>
<tr>
<td>50 and older</td>
<td>753,020</td>
<td>76.7 (71.3,81.4)</td>
</tr>
<tr>
<td>15-49</td>
<td>3,517,800</td>
<td>60.4 (57.0-63.6)</td>
</tr>
</tbody>
</table>
Viral Load Suppression
• The current policy is to test and treat everyone who is HIV positive as soon they are diagnosed
• Overall viral suppression was 87.3% in PLHIV on treatment, in all age groups
• The lowest viral suppression levels in ART users were among males (82.4%), 0–14 year olds (81.9%), PLHIV on farms (82.6%) and those living in Mpumalanga (82.9%)
• However not everyone who is living with HIV is on treatment, and consequently it was found that only 62.3% of all PLHIV irrespective of treatment were virally suppressed
Viral suppression among all PLHIV irrespective of treatment by age and sex, South Africa, 2017
90-90-90 - 15 to 64 years of age

- Diagnosed
- On Treatment
- Virally suppressed

### Female
- Diagnosed: 88.9%
- On Treatment: 72.2%
- Virally suppressed: 89.9%

### Male
- Diagnosed: 78.0%
- On Treatment: 67.4%
- Virally suppressed: 82.1%

### Total
- Diagnosed: 84.9%
- On Treatment: 70.6%
- Virally suppressed: 87.5%
HIV Prevalence
Overall HIV prevalence

- The estimate of HIV prevalence among South Africans of all ages in 2017 was 14.0% (95% CI: 13.1-15.0)
- This translates to 7.9 million (95% CI: 7.1 million - 8.8 million) PLHIV
- This increase is approximately 1.6 million more PLHIV when compared to 2012
- 2012 estimate of HIV prevalence among South Africans of all ages was 12.2% (95% CI: 11.4-13.1)
HIV by province, South Africa, 2017

KZN – KwaZulu-Natal; MP – Mpumalanga; FS – Free State; NW – North West; GP – Gauteng
EC – Eastern Cape; LP – Limpopo; NC – Northern Cape; WC – Western Cape
HIV Drug Resistance (HIVDR)
HIV Drug Resistance Testing

• Conducted at accredited laboratory

• Conducted on samples that were
  – virally unsuppressed defined as ≥1000 copies/ml
  – successfully amplified
Overall HIV drug resistance, South Africa, 2017

Drug resistant mutations (%)

- NNRTI: 18.9
- NRTI: 0.2
- NNRTI+NRTI: 7.8
- PI+NNRTI+NRTI: 0.5
- Total: 27.4

Drug class: NNRTI, NRTI, NNRTI+NRTI, PI+NNRTI+NRTI, Total
HIV drug resistance by sex, South Africa, 2017

<table>
<thead>
<tr>
<th>Sex</th>
<th>Any DRM</th>
<th>NNRTI</th>
<th>NNRTI+NRTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>29.4</td>
<td>19.6</td>
<td>9.7</td>
</tr>
<tr>
<td>Female</td>
<td>25.8</td>
<td>18.3</td>
<td>6.3</td>
</tr>
</tbody>
</table>
HIV drug resistance by ARV status, South Africa, 2017

<table>
<thead>
<tr>
<th>ARV status</th>
<th>Any DRM</th>
<th>NNRTI</th>
<th>NNRTI+NRTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARV +ve</td>
<td>55.7</td>
<td>14.3</td>
<td>40.4</td>
</tr>
<tr>
<td>ARV –ve</td>
<td>22.8</td>
<td>20</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Drug resistant mutations (%)
### HIV drug resistance among ART defaulters and ART naïve respondents, South Africa, 2017

<table>
<thead>
<tr>
<th>Variable</th>
<th>Any DRM % (95% CI)</th>
<th>NNRTI-only resistance % (95% CI)</th>
<th>Dual NNRTI &amp; NRTI Resistance % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARV status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARV –ve</td>
<td>22.8 (17.7-28.7)</td>
<td>20.0 (15.4-25.7)</td>
<td>2.1 (0.6-6.8)</td>
</tr>
<tr>
<td>ARV defaulters**</td>
<td>75.9 (59.2-87.3)</td>
<td>56.4 (34.4-76.2)</td>
<td>14.3 (2.5-52.1)</td>
</tr>
<tr>
<td>ARV naïve***</td>
<td>15.3 (6.3-32.8)</td>
<td>15.3 (6.3-32.8)</td>
<td>0</td>
</tr>
</tbody>
</table>

**ARV defaulters** - self-reported daily ARV use but tested ARV -ve;  
***ARV naïve - reported that they not taking ART and tested ARV –ve (PDR)
Circumcision
Trends in adult male self-reported circumcision, South Africa, 2002-2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Circumcised</th>
<th>Traditional</th>
<th>Medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>38.2</td>
<td>24.8</td>
<td>13.2</td>
</tr>
<tr>
<td>2008</td>
<td>40.6</td>
<td>25.2</td>
<td>14.6</td>
</tr>
<tr>
<td>2012</td>
<td>46.4</td>
<td>26.1</td>
<td>18.6</td>
</tr>
<tr>
<td>2017</td>
<td>61.6</td>
<td>27.6</td>
<td>30.8</td>
</tr>
</tbody>
</table>

Circumcision (%)
Behavioural Measures: Condom Use & Sexual Partnerships
Condom use at last sex, South Africa, 2002-2017
Sexual debut among respondents aged 15–24 years, South Africa, 2002 - 2017

Sex before 15 years of age (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>13.1</td>
<td>8.9</td>
<td>5.3</td>
</tr>
<tr>
<td>2005</td>
<td>11.9</td>
<td>8.4</td>
<td>5.1</td>
</tr>
<tr>
<td>2008</td>
<td>11.3</td>
<td>8.5</td>
<td>5.9</td>
</tr>
<tr>
<td>2012</td>
<td>16.7</td>
<td>10.7</td>
<td>6.0</td>
</tr>
<tr>
<td>2017</td>
<td>19.5</td>
<td>7.6</td>
<td>9.0</td>
</tr>
</tbody>
</table>
Multiple partners in the last 12 months, South Africa, 2002-2017

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24 years old</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>8.8</td>
<td>6.0</td>
<td>8.2</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-49 years old</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>2.5</td>
<td>1.8</td>
<td>3.0</td>
<td>4.0</td>
<td>5.1</td>
</tr>
<tr>
<td>Males</td>
<td>11.5</td>
<td>14.4</td>
<td>14.8</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>50 years and older</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>0.3</td>
<td>0.8</td>
<td>0.8</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>7.5</td>
<td>9.8</td>
<td>6.5</td>
<td>5.5</td>
<td></td>
</tr>
</tbody>
</table>
Age-disparate sexual relationships in 15-19 years age group by sex, South Africa, 2002-2017

*Numbers reported for males with a partner 5 or more years older than them are few and should be interpreted with caution.*
Behavioural Measures:
Perceptions, Knowledge & SBCC
## HIV status by perceived risk of HIV, South Africa, 2017

<table>
<thead>
<tr>
<th>Sex</th>
<th>Low-risk perception</th>
<th>High-risk perception</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>HIV + (%)</td>
</tr>
<tr>
<td>Female</td>
<td>7953</td>
<td>11.2</td>
</tr>
<tr>
<td>Male</td>
<td>5720</td>
<td>8.8</td>
</tr>
<tr>
<td>Total</td>
<td>13673</td>
<td>10.0</td>
</tr>
</tbody>
</table>
• In total 75.2% had been ever tested for HIV, with more females (79.3%) having done so than males (70.9%)
• Receiving HIV status in the last 12 months increased from 49.1% in 2008 to 66.8% in 2017
• HIV positive male youth were less aware of their status in the last 12 months as compared to females

![Awareness of HIV status, South Africa, 2017](chart.png)
Perceptions about PLHIV, South Africa, 2008-2017

a. If you knew that a shopkeeper or food seller had HIV, would you buy food from them?
b. Would you be willing to care for a family member with AIDS?
c. If a teacher has HIV but is not sick, he or she should be allowed to continue to teach?
d. It is not a waste of money to train or give a promotion to someone with HIV/AIDS?
e. Would you want to keep the HIV positive status of a family member a secret?
f. Are you comfortable talking to at least one member of your family about HIV/AIDS?
Social and Behaviour Change Communication (SBCC)

• Programmes covered
  • Soul City
  • Centre for Communication Impact (CCI)
  • LoveLife
  • Community Media Trust

• Target groups
  • Young women and girls/young people e.g. Rise clubs, ZAZI, LoveLife
  • Men e.g. Brothers for Life
Sexual behaviour by SBCC exposure level, South Africa, 2017

- Been tested and received results
- Tested in the last year
- Used a condom during last sex act
- Consistent condom use
- Rejection of wrong myths associated with HIV
- Early sexual debut
- Two or more sexual partners in past year

No exposure | Low exposure | Moderate exposure | High exposure
---|---|---|---
% | | | |
Conclusions and Recommendations
Successes

- HIV incidence has significantly declined since 2012 by 44% (378,700 new infections in 2012 to 231,100 new infections in 2017)
  - The biggest decline was 56% among females
- Compared to the previous year estimates
  - Overall, from 2016 (270 000) to 2017 (231 000) the number of new HIV infections dropped by 14%
  - New infections among AGYW were 1 300 per week, which is 35% less than the estimated 2 000 weekly new infections in 2016 (NSP, 2017)
- ART uptake more than doubled from the 2012 survey
  - This increased access to ART contributes to an increase in life expectancy as seen in the aging profile among PLHIV
- Increases in medical male circumcision since 2012
  - Over two-thirds of males aged 15-24 years are circumcised, over half of these are medical circumcisions
Successes continued

- Improvement in HIV testing, increasing awareness of HIV status
- The majority of respondents held positive attitudes toward PLHIV, which are consistent with low levels of stigma over time
- HIV communication campaigns are reaching South Africans
- Significant progress has been made towards the UNAIDS 90-90-90 targets. By 2017, South Africa had attained 85-71-86
- Compared to 2012 multiple sexual partnerships have decreased among young males, but still remain relatively high
Challenges

- The number of new HIV infections are still high, especially among females aged 15-24 years (1.51%) and females aged 15-49 years (0.93%)
  - As a result of the above, HIV prevalence and number of PLHIV have increased
  - This increase was also seen in all provinces, with substantial increases in both EC and WC
- Not all PLHIV are aware of their status, especially males
- Not everyone who is HIV positive is currently on treatment and as a result overall viral suppression among all PLHIV population is 62.3%
  - Lower among males and younger age groups
- High levels of HIDVR
  - Mainly NNRTI resistance
  - High HIVDR among ART defaulters
  - PDR 15.3%
Challenges continued

• Consistent condom use continues to be low
• Sexual debut before the age of 15 years among male youth continues to increase
• The number of adolescents girls who had sexual relationships with older sexual partners continue to increase
Collaborators
U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) through the U.S. CDC (Cooperative Agreement #GH001629) Department of Science and Technology, South African National AIDS Council, Global Fund, Right to Care, UNICEF, Centre for Communication Impact, Soul City, LoveLife

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Thank you for your attention
South Africa has the biggest HIV epidemic in the world, with an estimated 7.1 million people living with HIV (UNAIDS Data, 2017)

The country has the largest ART programme in the world, which has undergone even more expansion in 2016 with the implementation of ‘universal test and treat’ policy

The national HIV response is coordinated by the South African National AIDS Council

HIV surveillance has been key in monitoring the response to the epidemic
To date, the HSRC and its partners have undertaken five population-based surveys in this regard.

Previous surveys were conducted in 2002, 2005, 2008 and 2012.

These surveys have provided an important gauge of the HIV epidemic of South Africa.

This presentation is on the fifth survey in the series conducted in 2017.
Research Methods

Sampling frame – SABSSM V
National + 16 District/metro-level estimates

- 1000 SALs
- 585 SALs
- 457 SALs

- National sampling frame
- Additional SALs
- Selected districts sampling frame
- Natl. sampling frame SALs contributing to 16 district/metro-level estimates
Ethics approval was received from both HSRC and CDC

Participants had to provide informed consent in order for them to take part in the study
Overall viral suppression by age, South Africa, 2017

- HIV viral load suppression, defined as a viral load threshold of <1000 copies HIV RNA/ml, is a measure of ARV therapy efficacy
The following recommendations are made to SANAC, all government departments, civil society, labour, business, donors, traditional leaders and, more importantly, individuals:

- There is a need to strengthen targeted and comprehensive evidence-based multi-sectoral response to the HIV and AIDS epidemic
  - Strengthen, expand and support the ART programme with focus on reaching males and the younger population
  - Make available proven combination prevention interventions, continuing emphasis on high-risk groups especially females aged 15-24 years
    - Condoms
    - PrEP
  - Revitalize and strengthen behaviour change interventions including on:
    - Risk perception highlighting the fact that everyone is at risk of HIV infection
    - Improving treatment literacy among population to drive demand and adherence
– Promote circumcision and create demand for VMMC with an immediate goal to saturate the 15-34 year old age group
– Promote the elimination of mother-to-child transmission (EMTCT) of HIV
– Existing and new evidence needs to be used to inform new and more innovative SBCC campaigns, especially addressing social cultural issues and risk behaviours
– Support a targeted implementation of a widespread HIV testing and timely linkage to care campaign or programme
  • for those with a known HIV+ status who were tested before the introduction of test and treat in 2016 should be encouraged to ‘return to care’